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GB 2235112 A GB 1583928 A EP 0812113 A2

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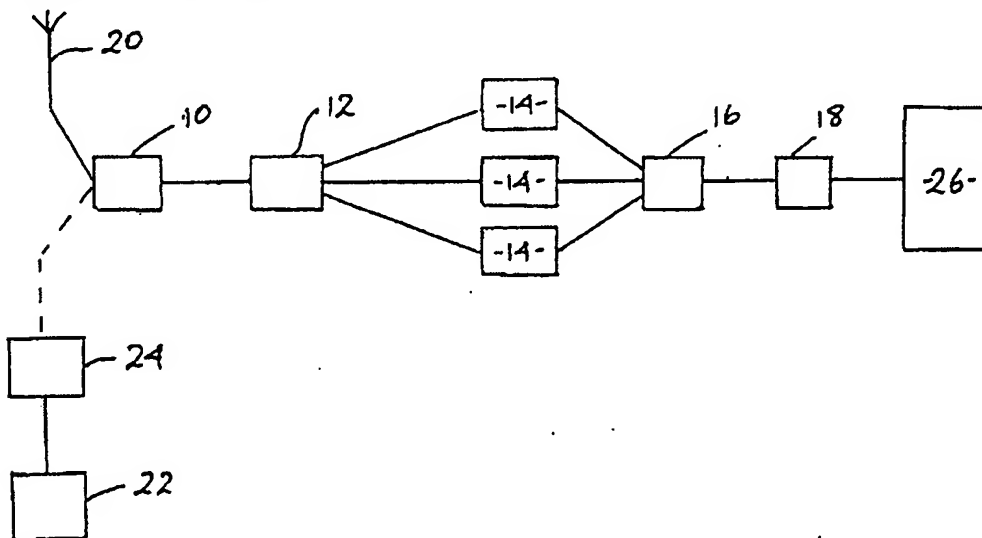
INT CL<sup>6</sup> H04N 5/00 7/06 7/12

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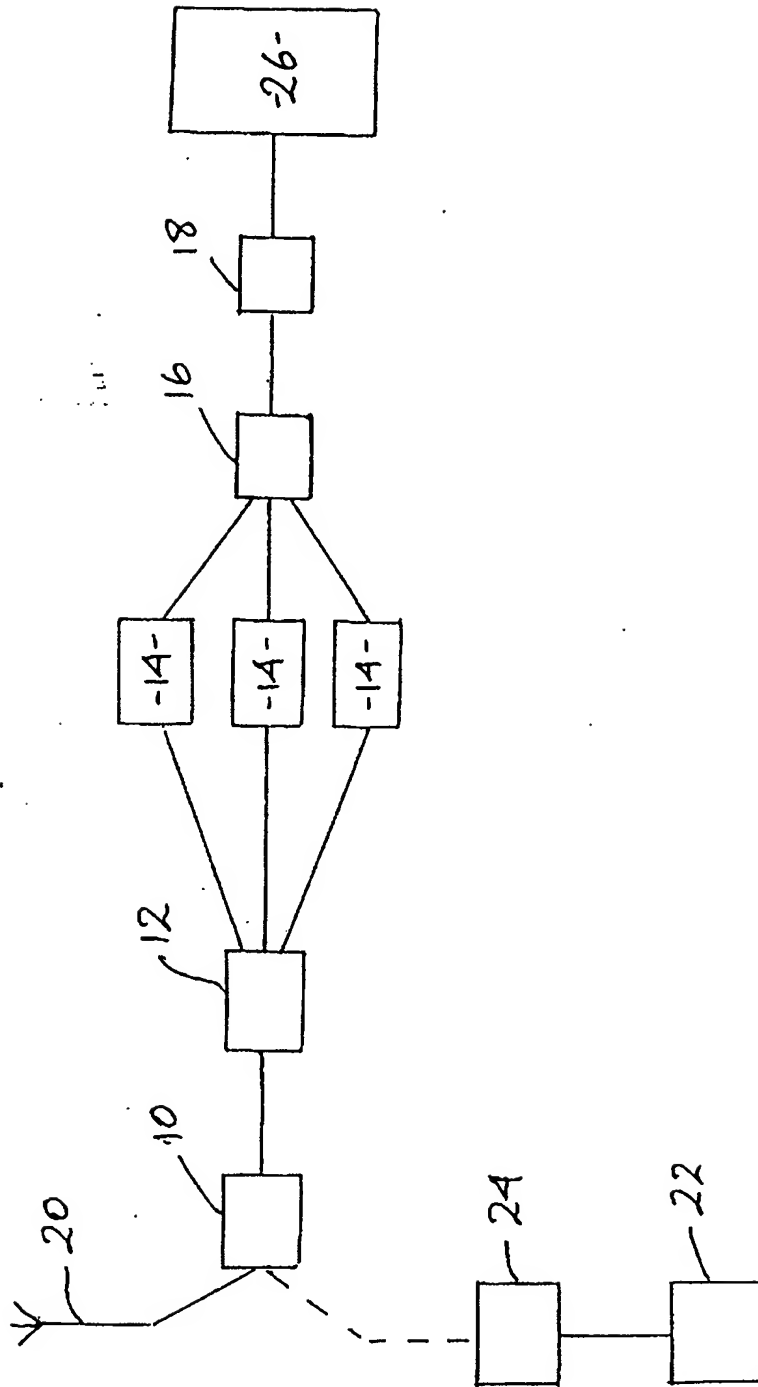
(54) Abstract Title

Signal processing apparatus

(57) An apparatus for processing signals, the apparatus comprising an input switch for receiving digital signals and providing portions of the signal in sequence at a plurality of outputs, a plurality of processors each connected to a respective output for processing its portion of the signal, and an output switch connected to the outputs of the processors for recombining the portions in sequence. As described, an analogue to digital converter 10 receives analogue video data from either an aerial 10 or video player 24 (via video camera 22) and provides the data in digital format to input switching unit 12. After splitting the input data into portions of one frames duration, switch 12 sequentially supplies the data portions to each one of a plurality of processors 14 in turn. Output switch 16 receives the processed portions in sequence from processors 14 and recombines them before outputting the data to digital to analogue converter 18 and thence to display unit 26.



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**2341508****APPARATUS FOR PROCESSING SIGNALS**

This invention is concerned with apparatus for processing signals.

It has been proposed to process digital signals, but such processes have involved a delay which makes many processes unacceptable for many applications.

It is an object of the present invention to obviate or mitigate this difficulty.

The present invention is apparatus for processing signals, the apparatus comprising an input switch for receiving a digital signal and providing portions of the signal in sequence at a plurality of outputs, a plurality of processors each connected to a respective output for processing the signal of its portions, and an output switch connected to the outputs of the processors for recombining the processed portions in sequence.

Preferably the input switch has three outputs and the output switch has three inputs.

The apparatus may include an output format converter having an input connected to the output of the second switch and an output, the converter changing the recombined signal from a digital format to a format of choice.

The apparatus may also include an input format converter for converting the format of an input signal to a digital format, the output of the input converter being connected to the input of the input switch.

An embodiment of the present invention and a process and application will now be described by way of example with reference to the accompanying drawing, the single figure of which is a block circuit diagram of apparatus according to the present invention.

Referring now to the drawing, apparatus for processing a television signal from a two dimensional to a three dimensional format includes an analogue to digital input converter 10 to the output of which is connected an input switch 12, in this embodiment a micro timer relay switch, having a plurality of outputs, in this embodiment three outputs. A plurality of processors 14 are each connected to a respective output of the input switch 12, and the outputs of the processors are connected to respective inputs of an output switch 16, whose output is passed to a digital to analogue output converter 18.

The input signal to the converter 10 is an analogue television signal which may be provided, for example, from an aerial 20 or from a video camera 22 through a video player 24. The output signal from the converter 18 is an analogue signal suitable for input to a television set 26.

To understand the operation of the apparatus it should be understood that a digital signal representing, for example, a particular programme can be processed from a two dimensional to a three dimensional format almost instantaneously but only after the complete programme has been received and stored. Thus, a programme broadcast in a two dimensional format can be viewed in a three dimensional format only after the programme has finished, this delay being unacceptable to the viewing public.

The present invention deals with this problem by splitting the two dimensional signal into short portions which are passed in sequence to processors which process the format of a received portion to a three dimensional format, the processed portions then being recombined in sequence. The delay involved is then negligible.

Referring again to the drawing, the input converter 10 converts the analogue signal received from the aerial 20 or video player 24 to a digital signal. The converter 10 will normally receive several channel signals from an aerial and is therefore provided with an adjustable tuner to allow selection of the channel of interest.

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The digital signal from the converter 10 passes to the input switch 12 which splits the signal into successive portions each of one frames duration. When a processor 14 has received its signal portion it processes it into the three dimensional format and then outputs the processed digital portion to the output switch 16. The processor 14 is then free to receive its next portion when the third processor has finished receiving the third portion.

The switch 16 receives the processed portions in sequence from the processors 14 and passes them to the digital to analogue output converter 18 so that the signal can be used by the television set 26 to show the programme as an apparently three dimensional picture.

The converters 10 and 18 are well known per se and are available as external I.V. Smart kits. Similarly, the processors 14 are microprocessors programmed with any one of the commercially available automated programmes for changing a digital signal format from two dimensional to three dimensional.

The embodiment described may be modified by, for example, using more processors or even just two, or by changing the type the location or even the number of switches or format converters.

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## CLAIMS

1. Apparatus for processing signals, the apparatus comprising an input switch for receiving a digital signal and providing portions of the signal in sequence at a plurality of outputs, a plurality of processors each connected to a respective output for processing its portions of the signal, and an output switch connected to the outputs of the processors for recombining the processed portions in sequence.
2. Apparatus as claimed in claim 1, in which the input switch has three outputs and the output switch has three inputs.
3. Apparatus as claimed in claim 1 or claim 2, including an output format converter having an input connected to the output of the second switch and an output, the converter changing the recombined signal from a digital format to a format of choice.
4. Apparatus as claimed in any preceding claim, further including an input format converter for changing the format of an input signal to a digital format, the output of the input converter being connected to the input of the input switch.
5. Apparatus for processing signals, substantially as hereinbefore described with reference to and as shown in the accompanying drawing.



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Application No: GB 9822044.5  
Claims searched: 1-5

Examiner: Andrew Fearnside  
Date of search: 4 February 1999

## Patents Act 1977 Search Report under Section 17

### Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK CI (Ed.Q): H4F (FEX, FDD, FGXX)

Int CI (Ed.6): H04N (5/00, 7/06, 7/12)

Other: Online databases: WPI, JAPIO, INSPEC

### Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X	GB 2235112 A (AT & T) See whole document. N.B. page 5, fig.2 and lines 34 to 36 of page 9.	1 to 4
X	GB 1583928 (BOSCH) See Abstract, page 1 lines 85 to 100, fig.3 and line 115 of page 2 to line 65 of page 3.	1 to 4
X	EP 0812113 A2 (MATSUSHITA) See whole document. N.B. fig.5 and cols. 3 and 4.	1 to 3

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

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